

International Application No. PCT/SG2005/000054
Attorney's ref. 1237P006PCTj
Title: Improved Method of Assembling Metal Doors and Metal Doors
Assembled thereby

Response to Written Opinion

This is a response to the Written Opinion of the International Searching Authority with a mailing date of 8 April 2005 for International Application No. PCT/SG2005/000054, titled "Improved Method Of Assembling Metal Doors And Metal Doors Assembled Thereby."

There are 22 claims pending for the present application. In the originally filed 23 claims, Claim 1, 4-8, 13, 14, 17, and 19-23 are replaced by amended claims bearing the same number; Claims 2, 3, 15, and 16 unchanged; and Claim 18 cancelled. Amendments are made to distinctively point out and particularly claim the disclosed invention. The amendments are supported by the originally filed application. No new matter has been added.

The Written Opinion objects to the originally filed claims 1-23 for lack of novelty and/or inventive step in view of: (a) EP 405675; (b) DE 3520500; (c) WO 1982/004281; and (d) DE 2351708. More specifically, the WO alleges that EP 405675 discloses all the features of the invention defined by claims 1-3, 5, 7, 9, 10, 12, 14-16, and 18, i.e., the citation relates to a door composed of interlockable building panels 13 and 16, the panels being provided with profiled edges, a tight fit between the profile edges being obtained through the use of rubber strips 19 and 20 stuck in the at least one channel formed by the

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profile edges. In addition, the WO alleges that the invention defined by claims 14-18 are not novel over (b), (c), or (d). Furthermore, the WO alleges that the features added by claims 4, 6, 8, 11, 13, and 19-23 lie within the technical capabilities of the person skilled in the art and therefore the subject matter of these claims lacks of inventive step.

After careful review of the cited references, Applicant respectfully submits that the allegations are not supported by the cited references. Therefore, Applicant traverses the allegations for the following reasons.

The present application claims a method of assembling a metal structure and a metal structure. The method embodied in Claims 1-13 is represented by Claim 1 claiming a method for assembling a metal structure with two or more skins by temporarily fastening a first skin with at least one profiled edge to a work surface; overlaying a second skin with at least one profiled edge by moving the second skin with at least one profiled edge to engage the at least one profile edge with the at least one profiled edge of the first skin, thereby the engaged profiled edges forming at least one channel; and applying at least one locking means into the at least one channel. The metal structure embodied in Claims 14-17 and 19-23 is represented by Claim 14 claiming a metal structure that comprises a first skin with at least one profiled edge substantially forming one side of the structure; at least one more skin with at least one profiled edge substantially forming

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the other side of the structure; and a locking means for engaging the skins together; wherein the at least one profiled edge of the first skin and the at least one profiled edge of the second skin form at least one channel, and a tight fit between the skins is obtained only after the locking means is applied to the at least one channel. In brief, the claimed metal structure comprises at least one channel formed by the profiled edges of the assembled skins and a locking means being inserted into the channel to tighten the skins together. The method is about assembling the claimed metal structure. The claimed method and structure are not taught or suggested by the cited references.

(a) EP 405675 B1 (EP '675)

EP '675 discloses a building panel with two edges that can interact with the edge of subsequent panels. See, Column 3, lines 16-19, and Fig. 3. Furthermore, EP '675 teaches that the two metal plates of the building panel can be glued together or attached to an isolating plate. See, Column 2, lines 16-26. It is evident that EP '675 does not concern about the assembly of the two plates into a building panel. As afore-discussed, the claimed invention of the present application is directed to a metal structure that comprises at least one channel formed by the profiled edges of the assembled skins and a locking means being inserted into the channel to tighten the skins together, and a method for assembling the claimed metal structure with two more skins. Therefore, Applicant respectfully submits that the claimed metal structure and method are not taught or suggested by EP '675, thus Claims 1-17 and 19-23 are novel and inventive.

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(b) DE 3520500 (DE '500), (c) WO 1982/004281 (WO '281), and
(d) DE 2351708 (DE '708)

All the references simply disclose a clip-on or snap-on locking design that is totally different from the locking mechanisms of the present invention. As afore-discussed, the claimed invention of the present application is directed to a metal structure that comprises at least one channel formed by the profiled edges of the assembled skins and a locking means being inserted into the channel to tighten the skins together, and a method for assembling the claimed metal structure with two more skins. Therefore, Applicant respectfully submits that the claimed metal structure and method are not taught or suggested by EP '675, thus Claims 1-17 and 19-23 are novel and inventive.

In summary, the four cited references (a-d) fail to teach or suggest the features of the claimed invention of claims 1-17 and 19-23 individually or in combination. Therefore, applicant respectfully requests that the objections to claims 1-17 and 19-23 be withdrawn.

Claims

What is claimed is:

1. A method for assembling two or more skins of a metal structure, the method comprising:
 - temporarily fastening a first skin with at least one profiled edge to a work surface;
 - overlaying a second skin with at least one profiled edge by moving the second skin with at least one profiled edge to engage the at least one profile edge with the at least one profiled edge of the first skin, thereby the engaged profiled edges forming at least one channel; and
 - applying at least one locking means into the at least one channel; and
 - finishing the metal structure.
2. The method of Claim 1, wherein the metal structure is a door.
3. The method of Claim 1, wherein the metal structure is a panel.
4. The method of Claim 1, wherein the step of moving comprises sliding the second skin over the first skin from one end of the first skin.
5. The method of Claim 1, wherein the step of moving comprises placing the second skin over the first skin.
6. The method according to Claim 1, wherein the channel distorted by the applying of the locking means.
7. The method according to Claim 1, wherein the channel not distorted by the applying of the locking means.

8. The method according to Claim 1, wherein the at least one profiled edge of the first skin and the at least one profiled edge of the second skin comprise engagement members; the engagement members of the first skin further complementary to the engagement members of the second skin.
9. The method of Claim 8, wherein the complementary engagement members are only brought into engagement by the applying of the locking means.
10. The method of Claim 1, wherein the application of the locking means is reversible.
11. The method of Claim 1, wherein the application of the locking means is not reversible.
12. The method of Claim 1, wherein in the application of the locking means causes the skins to be locked together.
13. The method of Claim 1, wherein the step of the finishing of the metal structure further comprises:
 - welding the skins;
 - applying fasteners;
 - installing ironmongery;
 - capping any exposed ends; and
 - painting the structure.
14. A metal structure comprising:
 - a first skin with at least one profiled edge substantially forming one side of the structure;
 - at least one more skin with at least one profiled edge substantially forming the other side of the structure; and
 - a locking means for engaging the skins together;

wherein the at least one profiled edge of the first skin and the at least one profiled edge of the second skin form at least one channel, and a tight fit between the skins is obtained only after the a locking means is applied to the at least one channel.

15. A metal structure according to Claim 14, wherein the structure is a door.
16. A metal structure according to Claim 14, wherein the structure is a panel.
17. A metal structure according to Claim 14, wherein the at least one profiled edge of the first skin and the at least one profiled edge of the at least one more skin comprise engagement members; the engagement members of the first skin further complementary to the engagement members of the at least one more skin.
18. Cancelled.
19. A metal structure according to Claim 14, wherein the locking means is a locking bar.
20. A metal structure according to Claim 14, wherein the locking means is a wedge.
21. A metal structure according to Claim 14, wherein the metal structure further comprises:
 - welding;
 - additional fasteners;
 - ironmongery;
 - end caps; and
 - paint.
22. A metal structure according to Claim 15, wherein the at least one profiled edge forming the one side of the first door is the shorter side (rail) of the door.

23. A metal structure according to Claim 15, wherein the at least one profiled edge forming the one side of the first door is the longer side (stile) of the door.

Claims

What is claimed is:

1. A method for assembling two or more skins of a metal structure, the method comprising:
temporarily fastening a first skin with at least one profiled edge to a work surface;
overlaying a second skin with at least one profiled edge by moving a the second skin with at least one profiled edge to engage the at least one profile edge with the at least one profiled edge of the first skin, thereby the engaged profiled edges forming at least one channel; and
applying at least one locking means into the at least one channel; and
finishing the metal structure.
2. The method of Claim 1, wherein the metal structure is a door.
3. The method of Claim 1, wherein the metal structure is a panel.
4. The method of Claim 1, wherein the step of moving comprises sliding the second skin over the first skin from one end of the first skin.
5. The method of Claim 1, wherein the step of moving comprises placing the second skin over the first skin.
6. The method according to Claim 1, wherein the channel distorted by the applying of the locking means.
7. The method according to Claim 1, wherein the channel not distorted by the applying of the locking means.

8. The method according to Claim 1, wherein the at least one profiled edge of the first skin and the at least one profiled edge of the second skin comprise engagement members; the engagement members of the first skin further complementary to the engagement members to the engagement members of the second skin.

9. The method of Claim 89, wherein the complementary engagement members are only brought into engagement by the applying of the locking means.

10. The method of Claim 1, wherein the application of the locking means is reversible.

11. The method of Claim 1, wherein the application of the locking means is not reversible.

12. The method of Claim 1, wherein in the application of the locking means causes the skins to be locked together.

13. The method of Claim 1, wherein the step of the finishing of the metal structure further comprises comprising::
welding the skins;
applying fasteners;
installing ironmongery;
capping any exposed ends; and
painting the structure.

14. A metal structure comprising:
a first skin with at least one profiled edge substantially forming one side of the structure; and
at least one more skin with at least one profiled edge substantially forming the other side of the structure; and
a locking means for engaging the skins together;

wherein the at least one profiled edge of the first skin and the at least one profiled edge of the second skin form at least one channel, and a tight fit between the skins is obtained only after the a locking means is applied to the at least one channel.

15. A metal structure according to Claim 14, wherein the structure is a door.
16. A metal structure according to Claim 14, wherein the structure is a panel.
17. A metal structure ~~door~~ according to Claim 14, wherein the at least one profiled edge of the first skin and the at least one profiled edge of the at least one more skin comprise engagement members; the engagement members of the first skin further complementary to the engagement members to the engagement members of the at least one more skin.
18. Cancelled.
19. A metal structure ~~The locking means~~ according to Claim 14, wherein the locking means is a locking bar.
20. A metal structure ~~The locking means~~ according to Claim 14, wherein the locking means is a wedge.
21. A metal structure according to Claim 14, wherein the metal structure further comprises comprising:
 - welding;
 - additional fasteners;
 - ironmongery;
 - end caps; and
 - paint.

22. A metal structure døør according to Claim 14-15, wherein the at least one profiled edge forming the one side of the first door is the shorter side (rail) of the door.

23. A metal structure døør according to Claim 14-15, wherein the at least one profiled edge forming the one side of the first door is the longer side (stile) of the door.